

PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Gopalan, Krishnamachari Atty. Docket: 85939.000158
Serial No.: 09/597,184 Examiner: M. Patterson
Filed: June 20, 2000 Art Unit: 1772
Title: METAL SUBSTRATE WITH BONDED ELASTOMERIC LAYER

PRELIMINARY AMENDMENT

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

Prior to substantive examination of the present application, please amend the application as follows:

In the Title:

METHOD FOR FORMING AN AUTOMOTIVE VEHICLE WEATHERSEAL
HAVING A METAL SUBSTRATE WITH BONDED ELASTOMERIC LAYER

In the Specification

On Page 1, before Line 3, please insert the paragraph

The present application is a divisional of U.S. Application No. 09/597,184 filed June 20, 2000 hereby expressly incorporated herein by reference.

In the Claims:

Please enter the amended claims as follows:

21. (New) A method of forming a weatherseal for an automotive vehicle, comprising:

(a) extruding an uncured peroxide curable rubber bonding layer to contact a surface of a metal reinforcement, the uncured peroxide curable rubber bonding layer including one of a polybutadiene and (meth)acrylate;

(b) extruding an uncured sulfur curable rubber layer to overlie the uncured peroxide curable rubber bonding layer to form an extrudate; and

(c) curing the extrudate to bond the peroxide curable rubber bonding layer to the metal reinforcement and bond the sulfur curable rubber layer to the peroxide curable rubber bonding layer.

22. (New) The method of Claim 21, further comprising curing the extrudate to preclude non destructive separation of the peroxide curable rubber bonding layer from the metal reinforcement.

23. (New) The method of Claim 21, further comprising substantially simultaneously extruding the uncured sulfur curable rubber layer and the uncured peroxide curable rubber bonding layer.

24. (New) The method of Claim 21, further comprising extruding the uncured sulfur curable rubber layer downstream of extruding the uncured peroxide curable rubber bonding layer.

25. (New) The method of Claim 21, wherein curing the extrudate includes heating the extrudate.

26. (New) The method of Claim 21, wherein curing the extrudate includes exposing the extrudate to heated air.

27. (New) The method of Claim 21, further comprising extruding the uncured peroxide curable rubber bonding layer to contact a clean surface of the metal reinforcement.

28. (New) The method of Claim 21, further comprising extruding the uncured sulfur curable rubber layer to directly contact the uncured peroxide curable rubber bonding layer.

29. (New) The method of Claim 21, further comprising including both a polybutadiene and (meth)acrylate in the uncured peroxide curable rubber bonding layer.

30. (New) The method of Claim 21, further comprising formulating the uncured peroxide curable rubber bonding layer to reduce a galvanic corrosion of the metal reinforcement.

31. (New) The method of Claim 21, further comprising encapsulating the metal reinforcement with the uncured peroxide curable rubber bonding layer.

32. (New) The method of Claim 21, further comprising encapsulating the uncured peroxide curable rubber bonding layer with the uncured sulfur curable rubber layer.

33. (New) The method of Claim 21, further comprising employing maleinated polybutadiene in the uncured peroxide curable rubber bonding layer.

34. (New) The method of Claim 21, further comprising employing one of a steel, stainless steel, aluminum or a galvanized steel as the metal reinforcement.

35. (New) A method of forming a weatherseal for an automotive vehicle, comprising:

(a) extruding an uncured peroxide curable rubber layer onto a metal reinforcement, the uncured peroxide curable rubber layer including one of a polybutadiene and (meth)acrylate;

(b) extruding an uncured sulfur curable rubber layer to overlie the uncured peroxide curable rubber layer to form an extrudate; and

(c) curing the extrudate.

36. (New) The method of Claim 35, further comprising substantially simultaneously extruding the uncured sulfur curable rubber layer and the uncured peroxide curable rubber layer.

37. (New) The method of Claim 35, further comprising extruding the uncured sulfur curable rubber layer downstream of extruding the uncured peroxide curable rubber layer.

38. (New) The method of Claim 35, wherein curing the extrudate includes heating the extrudate.

39. (New) The method of Claim 35, wherein curing the extrudate includes exposing the extrudate to heated air.

40. (New) The method of Claim 35, further comprising extruding the uncured peroxide curable rubber layer to directly contact the metal reinforcement.

41. (New) The method of Claim 35, further comprising extruding the uncured sulfur curable rubber layer to directly contact the uncured peroxide curable rubber layer.

42. (New) The method of Claim 35, further comprising curing the extrudate to bond the peroxide curable rubber layer to the metal reinforcement and bond the sulfur curable rubber layer to the peroxide curable rubber layer.

43. (New) The method of Claim 35, further comprising including both a polybutadiene and (meth)acrylate in the uncured peroxide curable rubber layer.

44. (New) The method of Claim 35, further comprising formulating the uncured peroxide curable rubber layer to reduce a galvanic corrosion of the metal reinforcement.

45. (New) The method of Claim 35, further comprising encapsulating the metal reinforcement with the uncured peroxide curable rubber layer.

46. (New) The method of Claim 35, further comprising encapsulating the uncured peroxide curable rubber layer with the uncured sulfur curable rubber layer.

47. (New) The method of Claim 35, further comprising employing maleinated polybutadiene in the uncured peroxide curable rubber layer.

48. (New) The method of Claim 35, further comprising employing one of a steel, stainless steel, aluminum or a galvanized steel as the metal reinforcement.

49. (New) A method of forming a weatherseal for an automotive vehicle, comprising:

- (a) extruding an uncured peroxide curable rubber layer onto a metal reinforcement;
- (b) extruding an uncured sulfur curable rubber layer to overlie the uncured peroxide curable rubber layer to form an extrudate; and
- (c) curing the extrudate.

50. (New) The method of Claim 49, further comprising substantially simultaneously extruding the uncured sulfur curable rubber layer and the uncured peroxide curable rubber layer.

51. (New) The method of Claim 49, further comprising extruding the uncured sulfur curable rubber layer downstream of extruding the uncured peroxide curable rubber layer.

52. (New) The method of Claim 49, wherein curing the extrudate includes heating the extrudate.

53. (New) The method of Claim 49, wherein curing the extrudate includes exposing the extrudate to heated air.

54. (New) The method of Claim 49, further comprising directly contacting the uncured peroxide curable rubber layer and the metal reinforcement.

55. (New) The method of Claim 49, further comprising directly contacting the uncured sulfur curable rubber layer and the uncured peroxide curable rubber layer.

56. (New) The method of Claim 49, further comprising including one of a polybutadiene and (meth)acrylate in the uncured peroxide curable rubber layer.

57. (New) The method of Claim 49, further comprising including both a polybutadiene and (meth)acrylate in the uncured peroxide curable rubber layer.

58. (New) The method of Claim 49, further comprising formulating the uncured peroxide curable rubber layer to reduce a galvanic corrosion of the metal reinforcement.

59. (New) The method of Claim 49, further comprising encapsulating the metal reinforcement with the uncured peroxide curable rubber layer.

60. (New) The method of Claim 49, further comprising encapsulating the uncured peroxide curable rubber layer with the uncured sulfur curable rubber layer.

61. (New) The method of Claim 49, further comprising employing maleinated polybutadiene in the uncured peroxide curable rubber layer.

62. (New) The method of Claim 49, further comprising employing one of a steel, stainless steel, aluminum or a galvanized steel as the metal reinforcement.

REMARKS

Applicant thanks Examiner Patterson for the detailed analysis in the Office Action of July 6, 2001. Entry of the foregoing amendment and reconsideration of the continued prosecution application is respectfully requested.

In the final Office Action mailed July 6, 2001 (Paper 7), Examiner Patterson relied upon Drake (US Patent No. 5,521,248) to reject all the pending claims, Claims 1-10 and 14-20, under 35 U.S.C. §103 as being unpatentable over Drake. These claims were directed to a weatherseal product.

All the previously pending claims have been cancelled in favor of newly added Claims 21-62. The newly added claims are directed to a method of manufacturing a weatherseal for an automobile.

As stated in the prior description of Drake, Examiner Patterson asserts “Drake et. al. disclose a bonding veneer for bonding a *cured* elastomer to a metal substrate.” [emphasis added] (Paper 7, page 3)

In contrast, the present method claims recite in part “(a) extruding an *uncured* peroxide curable rubber layer onto a metal reinforcement...; (b) extruding an *uncured* sulfur curable rubber layer to overlie the uncured peroxide curable rubber layer to form an extrudate; and (c) curing the extrudate...” [emphasis added] (Claims 21-62).

Further, Drake does not disclose or suggest the present relation between the cure system of the bonding layer (the present peroxide cured layer) and the overlying feature layer (the sulfur cured layer). Not only is there is no suggestion to employ the present different cure mechanisms in different layers, but Drake does not disclose or suggest the extrusion of an uncured peroxide curable layer and an uncured sulfur curable layer.

Specifically, applicant notes Drake does not disclose or suggest the extrusion of two layers. In contrast, Drake is directed to a pumpable adhesive for use in an assembly

line type process to replace a welding operation in the assembly line, with a gluing operation. This does not and cannot suggest the presently recited extrusion.

Therefore, applicant respectfully submits all the pending claims, Claims 21-62 are in condition for allowance. If, however, Examiner Patterson feels that any further issues remain he is cordially invited to contact the undersigned so that such matters may be promptly resolved.

Respectfully submitted,



Brian B. Shaw, Registration No. 33,782
HARTER, SECREST & EMERY LLP
1600 Bausch & Lomb Place
Rochester, New York 14604

Date: December 6, 2001

VERSION WITH MARKINGS SHOWING CHANGES MADE

In the Title:

Please delete the title "METAL SUBSTRATE WITH BONDED ELASTOMERIC LAYER and insert instead --METHOD FOR FORMING AN AUTOMOTIVE VEHICLE WEATHERSEAL HAVING A METAL SUBSTRATE WITH BONDED ELASTOMERIC LAYER--.

In the Specification

On Page 1, before Line 3, please insert the paragraph "The present application is a divisional of U.S. Application No. 09/597,184 filed June 20, 2000 hereby expressly incorporated herein by reference."

In the Claims:

Please enter the amended claims as follows:

Please cancel Claims 1-10 and 14-20.

21. (New) A method of forming a weatherseal for an automotive vehicle, comprising:

(a) extruding an uncured peroxide curable rubber bonding layer to contact a surface of a metal reinforcement, the uncured peroxide curable rubber bonding layer including one of a polybutadiene and (meth)acrylate;

(b) extruding an uncured sulfur curable rubber layer to overlie the uncured peroxide curable rubber bonding layer to form an extrudate; and

(c) curing the extrudate to bond the peroxide curable rubber bonding layer to the metal reinforcement and bond the sulfur curable rubber layer to the peroxide curable rubber bonding layer.

22. (New) The method of Claim 21, further comprising curing the extrudate to preclude non destructive separation of the peroxide curable rubber bonding layer from the metal reinforcement.

23. (New) The method of Claim 21, further comprising substantially simultaneously extruding the uncured sulfur curable rubber layer and the uncured peroxide curable rubber bonding layer.

24. (New) The method of Claim 21, further comprising extruding the uncured sulfur curable rubber layer downstream of extruding the uncured peroxide curable rubber bonding layer.

25. (New) The method of Claim 21, wherein curing the extrudate includes heating the extrudate.

26. (New) The method of Claim 21, wherein curing the extrudate includes exposing the extrudate to heated air.

27. (New) The method of Claim 21, further comprising extruding the uncured peroxide curable rubber bonding layer to contact a clean surface of the metal reinforcement.

28. (New) The method of Claim 21, further comprising extruding the uncured sulfur curable rubber layer to directly contact the uncured peroxide curable rubber bonding layer.

29. (New) The method of Claim 21, further comprising including both a polybutadiene and (meth)acrylate in the uncured peroxide curable rubber bonding layer.

30. (New) The method of Claim 21, further comprising formulating the uncured peroxide curable rubber bonding layer to reduce a galvanic corrosion of the metal reinforcement.

31. (New) The method of Claim 21, further comprising encapsulating the metal reinforcement with the uncured peroxide curable rubber bonding layer.

32. (New) The method of Claim 21, further comprising encapsulating the uncured peroxide curable rubber bonding layer with the uncured sulfur curable rubber layer.

33. (New) The method of Claim 21, further comprising employing maleinated polybutadiene in the uncured peroxide curable rubber bonding layer.

34. (New) The method of Claim 21, further comprising employing one of a steel, stainless steel, aluminum or a galvanized steel as the metal reinforcement.

35. (New) A method of forming a weatherseal for an automotive vehicle, comprising:

(a) extruding an uncured peroxide curable rubber layer onto a metal reinforcement, the uncured peroxide curable rubber layer including one of a polybutadiene and (meth)acrylate;

(b) extruding an uncured sulfur curable rubber layer to overlie the uncured peroxide curable rubber layer to form an extrudate; and

(c) curing the extrudate.

36. (New) The method of Claim 35, further comprising substantially simultaneously extruding the uncured sulfur curable rubber layer and the uncured peroxide curable rubber layer.

37. (New) The method of Claim 35, further comprising extruding the uncured sulfur curable rubber layer downstream of extruding the uncured peroxide curable rubber layer.

38. (New) The method of Claim 35, wherein curing the extrudate includes heating the extrudate.

39. (New) The method of Claim 35, wherein curing the extrudate includes exposing the extrudate to heated air.

40. (New) The method of Claim 35, further comprising extruding the uncured peroxide curable rubber layer to directly contact the metal reinforcement.

41. (New) The method of Claim 35, further comprising extruding the uncured sulfur curable rubber layer to directly contact the uncured peroxide curable rubber layer.

42. (New) The method of Claim 35, further comprising curing the extrudate to bond the peroxide curable rubber layer to the metal reinforcement and bond the sulfur curable rubber layer to the peroxide curable rubber layer.

43. (New) The method of Claim 35, further comprising including both a polybutadiene and (meth)acrylate in the uncured peroxide curable rubber layer.

44. (New) The method of Claim 35, further comprising formulating the uncured peroxide curable rubber layer to reduce a galvanic corrosion of the metal reinforcement.

45. (New) The method of Claim 35, further comprising encapsulating the metal reinforcement with the uncured peroxide curable rubber layer.

46. (New) The method of Claim 35, further comprising encapsulating the uncured peroxide curable rubber layer with the uncured sulfur curable rubber layer.

47. (New) The method of Claim 35, further comprising employing maleinated polybutadiene in the uncured peroxide curable rubber layer.

48. (New) The method of Claim 35, further comprising employing one of a steel, stainless steel, aluminum or a galvanized steel as the metal reinforcement.

49. (New) A method of forming a weatherseal for an automotive vehicle, comprising:

(a) extruding an uncured peroxide curable rubber layer onto a metal reinforcement;

(b) extruding an uncured sulfur curable rubber layer to overlie the uncured peroxide curable rubber layer to form an extrudate; and

(c) curing the extrudate.

50. (New) The method of Claim 49, further comprising substantially simultaneously extruding the uncured sulfur curable rubber layer and the uncured peroxide curable rubber layer.

51. (New) The method of Claim 49, further comprising extruding the uncured sulfur curable rubber layer downstream of extruding the uncured peroxide curable rubber layer.

52. (New) The method of Claim 49, wherein curing the extrudate includes heating the extrudate.

53. (New) The method of Claim 49, wherein curing the extrudate includes exposing the extrudate to heated air.

54. (New) The method of Claim 49, further comprising directly contacting the uncured peroxide curable rubber layer and the metal reinforcement.

55. (New) The method of Claim 49, further comprising directly contacting the uncured sulfur curable rubber layer and the uncured peroxide curable rubber layer.

56. (New) The method of Claim 49, further comprising including one of a polybutadiene and (meth)acrylate in the uncured peroxide curable rubber layer.

57. (New) The method of Claim 49, further comprising including both a polybutadiene and (meth)acrylate in the uncured peroxide curable rubber layer.

58. (New) The method of Claim 49, further comprising formulating the uncured peroxide curable rubber layer to reduce a galvanic corrosion of the metal reinforcement.

59. (New) The method of Claim 49, further comprising encapsulating the metal reinforcement with the uncured peroxide curable rubber layer.

60. (New) The method of Claim 49, further comprising encapsulating the uncured peroxide curable rubber layer with the uncured sulfur curable rubber layer.

61. (New) The method of Claim 49, further comprising employing maleinated polybutadiene in the uncured peroxide curable rubber layer.

62. (New) The method of Claim 49, further comprising employing one of a steel, stainless steel, aluminum or a galvanized steel as the metal reinforcement.